CLAIMS

1. A device for crystallising plastic material, in particular polyethylene terephthalate, comprising a treatment space (12) for accommodating the plastic material in the shape of pieces or pellets, said treatment space (12) being able to be charged with plastic material via at least one feed aperture (14) and discharged by at least one discharge aperture (19); a feed device (15) for a treatment gas via a floor region (16) of the treatment space (12) and at least one partition wall (13) provided in the treatment space (12) for dividing the treatment space (12) into at least two compartments (12', 12") which are interconnected via a free space (18) for conveying the plastic material from one compartment (12', 12") to the other compartment (12', 12") so that from the feed aperture (14) to the discharge aperture (19) the plastic material passes along a predefined, essentially vertical path (21); characterised in that the two compartments (12', 12") are provided in particular by way of sectors, in a mutual, at least approximately rotation-symmetrical housing (11).

2. A device according to claim 1, characterised in that due to the arrangement of free space or free spaces (18) and the discharge opening (19), in each instance the path (21) at different levels in longitudinal cross-section zigzags or meanders through the treatment space.

3. A device according to claim 1 or 2, characterised in that at least one free space (18) is provided at the bottom of the associated partition wall (13), and that preferably the discharge aperture (19) is provided at the top of the subsequent compartment (12").

4. A device according to one of the preceding claims, characterised in that a partition wall (13) is provided below the feed aperture (14), for deflecting the incoming plastic material by means of a funnel section (13'), so as to deflect the material to a preceding compartment (12'), thus at least partially covering the subsequent compartment (12") by the funnel section (13').

5. A device according to one of the preceding claims, characterised in that the first compartment (12') takes up more than half, preferably more than 2/3 of the area in top view of the treatment space (12) which is at least approximately rotation-symmetrical, and that this first compartment (12') is followed by a second compartment (12") which is accordingly smaller.

6. A device according to one of the preceding claims, characterised in that a monitoring arrangement such as an inspection glass (24) is associated with at least one compartment (12"), e.g. the last compartment.

7. A device according to one of the preceding claims, characterised in that the floor region of the treatment space (12) is the perforated floor (16) of a fluidised bed.

8. A method for treating plastic material, in particular polyethylene terephthalate, in which the material which has a relatively low temperature is first crystallised during heating before said material is led to heating or condensation in a solid phase, in particular using a device according to one of the preceding claims, characterised in that the material is exposed to hot treatment gas for at least 10 minutes in at least two spaces (12', 12") and thus for crystallisation is heated to a temperature exceeding 135 °C, e.g. 140 - 180 °C, and that said material subsequently, in a preheating space (31) comprising up to eight stages, preferably at least two stages, is heated to a temperature of at least 185 °C, preferably at least 200 °C and in particular to approx. 220 °C.

9. A method according to claim 8, characterised in that the hot treatment gas is admitted during crystallisation at a temperature of 165 to 185 °C.

10. A method according to claim 8 or 9, characterised in that for evening out the treatment and thus the product quality, the crystallised material is brought into the shape of a bulk material stream of four-sided, in particular rectangular cross-section of essentially even bulking across the cross-section, with treatment gas flowing from one side (L) of the four-sided cross-section.

11. A method according to claim 10 characterised in that the ratio of the rectangular sides (B:L) of the cross-section of the bulk material stream is approximately 1:2 to 1:15, preferably ranging from 1:3 to 1:10, with the treatment gas being

conducted through the bulk material stream from the larger side of the rectangle (L).

12. A method according to claim 10 or 11, characterised in that the treatment gas is applied to one side (L) of the four-sided cross-section in at least two stages, each of increased temperature, preferably from the opposite side.

13. A method according to claim 12, characterised in that the treatment gas is conveyed in reverse flow from a stage (34-37) of lower temperature to a stage (35-38) of higher temperature.

14. A method according to claim 12 or 13, characterised in that the treatment gas is conveyed, in a zigzagging or meandering way, several times through the four-sided cross-section of the bulk material in at least three stages (34-37 or 35-38).

15. A method according to claim 12 or 13, characterised in that the bulk material of four-sided cross-section is conveyed essentially vertically, and that the treatment gas is conveyed essentially horizontally through the four-sided cross-section.

16. A method according to one of the preceding claims, characterised in that precrystallisation and crystallisation are preferably carried out within a duration of 10 to 80 minutes, preferably 15 to 40 minutes, in particular within approx. 20 to 30 minutes.

17. A method according to one of the preceding claims, characterised in that heating following

crystallisation, including precondensation, takes place within a duration of 60 to 120 minutes, in particular approx. 90 minutes.